

Draft: Comments Welcome

Developing Human Capacities in Poor Countries

Malcolm McPherson

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**Office of Education, Bureau for Economic Growth, Agriculture, and Trade
United States Agency for International Development
and Center for Business and Government,
John F. Kennedy School of Government, Harvard University**

“The global economy is changing. Wealth is no longer coming from the land. It is coming from the human mind. Human imagination and creativity are the sources of a country’s future wealth and prosperity. It does not matter how much land and natural resources we own. It only matters what we can imagine and create. It does not matter what we know. It only matters what we will learn.”

Shimon Peres, Nobel Laureate, *The Boston Globe*, op-ed, p. A-19, October 21, 2004

INTRODUCTION

For several decades, international aid agencies have emphasized the development of human capacities in poor countries.¹ Many activities have contributed: teacher training, curriculum development, non-formal education, distance learning, the construction of schools and training facilities, publication and distribution of teaching material, the establishment of regional research institutes, school-to-work programs, support for networks of scholars, and study and travel grants, fellowships, and training both locally and abroad.² Few aspects of economic development have received such determined, sustained assistance. The effort has been well motivated. Human capacity is fundamental to economic growth and social development.³

Poor countries have contributed, devoting large shares of their budgets to education and training in support of human capacity development.⁴ The outcomes have been mixed. In some countries – Taiwan, Singapore, Malaysia, Korea, Brazil, India and Mauritius – the human capacity improvements have boosted economic growth and social development. Elsewhere – Nigeria, Sierra Leone, Malawi, Kenya, Argentina, South Africa, Côte d’Ivoire, and Senegal among others – much of the human capacity has been misdirected and wasted. Due to economic mismanagement, weak institutions, dysfunctional organizations, and civil disruption in these countries many highly skilled workers have emigrated. Generating human capacity is one thing; using it to create and sustain economic growth and improve national welfare is another.

In 2000, the delegates to the Millennium Development Summit held in New York agreed to achieve by 2015 eight millennium development goals (MDGs).⁵ Two of the eight goals relate to education: ensure that all children complete primary school,⁶ and achieve gender equality in primary and secondary schools.⁷ The target of universal primary education (UPE) established a firm date for a goal first adopted as part of the Education for All (EFA) agenda at Jomtien, Thailand in 1990 and reaffirmed in Dakar, Senegal in 2000.⁸

While reviewing progress towards the MDGs in 2002, the World Bank concluded that many poor countries were not moving fast enough to meet the UPE target. The Bank and several bilateral donors formed a partnership to create a Fast Track Initiative (EFA-FTI). Its would “...support countries to achieve the MDG for Primary Education.”⁹ Time will

reveal if this endeavor succeeds.¹⁰ What we do know already, however, is that donor support is only one of numerous factors that will be required.¹¹

This paper has a framework that helps identify the positive and negative factors influencing progress towards UPE. It does this by highlighting how human capacity is generated and used.

The paper is arranged as follows. Section two discusses the contribution of primary education to economic development, and the changes needed within the education system and the broader economy and society that enable primary education to expand. Section three examines the factors, both within and outside the education system, that contribute to the generation and use of human capacity. Section four presents a framework for analyzing these factors. Among other things, it shows that EFA-FTI is a potentially useful but narrow means of expanding primary education. Section five uses the indicators to illustrate the different paths along which developing countries can move towards UPE. For many poor countries, the most obvious path of directly expanding primary education may not be the most rapid, or enduring, way forward. Section six has concluding observations and suggestions for further research.

BACKGROUND

Public policies that promote economic development require action on two fronts. One set of activities is needed to generate income, improve access, enhance welfare, and redress inequities. These are the direct goals of public policy. Examples include improved agricultural technology, training teachers, removing barriers to learning opportunities, supplying rural health clinics with medicine, connecting squatter housing to sanitation services, and providing food relief. A second set of activities is required to support and sustain the first set.¹² Examples are rural road construction, training the trainers of teachers, subsidizing families whose children face high education risks, establishing inventory management, control, and auditing systems, staffing and funding public works departments, and engaging NGOs and civil society to strengthen food marketing and distribution networks.

Promoting UPE requires action on two fronts as well. Raising primary school enrolment requires that qualified teachers be hired, relevant courses be designed, facilities be expanded, teaching materials be supplied, and additional operating costs be financed. To sustain these enrolments as learning outcomes improve¹³ requires numerous complementary economic and social changes.¹⁴

Two such changes are infrastructure development and the mitigation of poverty. Schools need to be accessible to transport and connected to sanitation, drainage, and potable water. Energy of some form (such as electricity from a local or national grid) is essential. Mitigating poverty raises the effective demand for education.¹⁵ Low-income families find the opportunity cost of foregone income (when children attend school) is a major

burden.¹⁶ Children from poor families are often unhealthy and under-nourished. Few parents in low-income families have been to school. Many, especially mothers, are illiterate. Constrained by the need to work, an uncertain food supply, poor health, and parents who have had minimal benefit from formal education children from low-income households find it difficult to attend school.¹⁷ Providing the direct inputs to UPE, namely, school buildings, textbooks, and teachers is only part of any solution. The circumstances of these families have to improve in several dimensions (most of which do not involve education) if children are to attend school continuously and gain from the experience.¹⁸

Creating and sustaining the conditions that promote UPE are not easy. Indeed, there is no historical example where that process has been successfully squeezed into a fifteen-year period, let alone the decade that remains until 2015. All of the currently developed countries, beginning with Prussia and Scotland in the early 1800s and the United States in the early 1900s achieved universal primary and universal secondary education only after long periods of preparation.¹⁹ Furthermore, the progress in education was accompanied by fundamental shifts in political, social, and economic conditions, all of which have been widely documented. A similar pattern has been evident in the newly industrialized countries such as Singapore, Korea, Malaysia, Taiwan, and Mexico. More important, rich and poor countries alike have found that in order to keep their children in school and enhance the quality of education they need to regularly and systematically reform their education systems.²⁰

The MDG for primary education and EFA-FTI represent new departures. For the first time in history, developing countries with donor support are attempting to compress into a few years, the expansion of education that, given their low per capita incomes, would normally take several decades. Furthermore, for the first time in history a large number of developing countries, as a matter of policy and strategy, are emphasizing the expansion of only one dimension of education. Donors engaged in this enterprise obviously believe their approach is feasible. It is useful, however, to briefly examine what other complementary changes are required (in physical and human capital, financial resources, organizations, and institutions) if the effort is to succeed.

Though such single-dimensional (and unbalanced) approaches as EFA-FTI are unusual in education, they have been commonplace in economic development, traceable to development strategies designed to accelerate economic growth.²¹ For example, Stalin took extraordinary measures in the Soviet Union to raise the rate of investment so as to boost industry. In Tanzania, Julius Nyerere adopted a Mahalanobis-style (Indian planning) effort to modernize the economy by promoting “basic industries.”²² In the late 1960s and early 1970s, Kenneth Kaunda in Zambia nationalized most sectors of the economy believing that government direction of economic activity would raise the income of all Zambians. The strategy failed and Zambia is now one of the poorest countries in Africa.²³ From its independence (1947) until the early 1990s, successive governments in India maintained that the public sector had an obligation to control the “commanding heights” of the economy. Economic growth accelerated only when state controls were dismantled and private initiative was encouraged and rewarded.

These examples have a number of common elements. All of the forced-paced approaches to development were dead-end strategies. In their enthusiasm to push a single goal, the respective governments downplayed the importance of sustained, complementary changes throughout the economy and society more generally. By ignoring the need for an appropriate context, sustained economic growth and social development could not (and did not) materialize.

This outcome has been unfortunate. Development economists and other social scientists have long understood that the context within which policies are implemented is just as relevant to growth and development as the policies themselves.²⁴ The theory and practice of planning²⁵ two aspects to which education specialists have made important contributions²⁶ are premised on taking a broad range of factors into account.

All of these examples point in the same direction. Successful development emerges from making feasible policy choices that are supported by appropriate organizational and institutional changes. No less applies to education.

FACTORS INFLUENCING HUMAN CAPITAL AND HUMAN CAPACITY

Human capital and human capacity are different aspects of the same phenomenon.²⁷ Human capacity, manifest in the skills, talents, faculties, competences, proficiencies, and capabilities of human agents, produces income and improves welfare. The value of human capital is directly related to that income and welfare. With only one exception, human capital has all the features of a capital good, i.e., an entity yielding valuable services over an extended period. Human capital is increased by investment, i.e., the use of current resources in the expectation of a future return. Human capacities take time to generate and maintain. They depreciate through inattention and non-use. As knowledge, technology, market conditions, and social circumstances change, human capacities can become obsolete. Combining human capital with other resources (finance, physical capital, equipment, and information) enhances its productivity.²⁸ The exception is that human agents, in whom the capacities inhere, cannot be owned.²⁹ Only their services (i.e., the product of the human capital) can be bought and sold.

In principle, the value of an individual's human capital is the income and welfare cumulated over his/her expected lifetime. Measuring human capital is not easy. (One approach is described in Annex 2.) The exercise is rife with empirical and conceptual difficulties.³⁰ Since work is only one of several ways to generate income and improve welfare, the value of time spent not working needs to be included as well. There are major errors involved in projecting an individual's income profile, the expected number of years of productive work, the opportunity cost of non-work activities, the relevant rate of time preference, the costs (time, effort, finance) of maintaining and acquiring new skills and knowledge, the value of skills gained through experience,³¹ the willingness to compete and persevere, and the motivation to excel.

By far the largest variation in the value of human capital results from changes in which human capacity is used. The relevant context for some professions, brain surgeons and cancer specialists for example, is international. Other professions, such as praise-singers and casual workers, are valued in specific (local) settings. The value of human capital changes with these settings.³² Other considerations are relevant as well. Large numbers of studies show that education and training have high private and social returns.³³ Yet, in many of the settings where those high returns have been measured human capacities are wasted. To illustrate, roughly 115 million children worldwide did not attend school in 2003. Only half of those who enter primary school finish. In developing countries, one quarter of adults (almost 900 million people, two-thirds of whom are women) cannot read or write.³⁴ Furthermore, around half a billion people, the so-called “working poor,” are occupied in tasks that are well below their physical and intellectual capacities.³⁵ Roughly, two hundred million people are not working at all.³⁶ These data suggest that in order to better promote efforts to expand human capacity, it is essential to understand why such large numbers of potentially productive workers remain underutilized.

One explanation is the collective action problem. The situation is familiar.³⁷ Private individuals would invest in education if only productive work were available; entrepreneurs would provide productive work, if skilled and motivated workers could be found; and governments would expand education and training if there were productive work that generated sufficient tax revenue to offset the costs. A second explanation is economic mismanagement.³⁸ Even when governments in developing countries could assemble the resources (including foreign assistance) to use human capacity productively, a virtuous cycle of rising employment, output, and tax revenues does not materialize because of mismanagement, dysfunctional organizations, and (often) corruption.

A further problem is that most of the poorest countries are growing too slowly for human capacity to expand rapidly.³⁹ Though often glossed over, rapid economic growth is educational. As the economy expands, a growing number of workers learn (by doing, by observing, by adjusting, by competing, by sharing, by trading, by exchanging, by using, and so on) as they are exposed to an increasing variety of employment opportunities. In addition to developing new skills, they also learn that effort, diligence and discipline are rewarded, that personal and social progress require initiative, flexibility, and adaptation, and that innovation, creativity and risk-taking (to gain additional knowledge and information) are possible and profitable. In the process, they acquire and reinforce attitudes that sustain the behavior that spurs economic growth.⁴⁰ That is, rapid economic growth rewards those who invest in boosting their capacity (through higher wages, productive employment, and improved welfare) while simultaneously stimulating further investment in human capacity.⁴¹

To build upon the advantages created by the spread of information and knowledge, countries seeking to promote and sustain rapid economic growth need to reorient their approach to macroeconomic management.⁴² As a matter of strategy, governments should match their agenda to their capacities.⁴³ As a matter of policy, governments need to be

selective. This requires a determined focus on a few core elements:⁴⁴ achieve and sustain macroeconomic stability; promote agriculture to raise rural incomes and assure national food security; reinforce the nation's competitive advantage in world markets; and reform the economy so as to reduce aid dependence.⁴⁵ Achieving macroeconomic stability requires the government to balance its budget over the business cycle, maintain national debt within prudent limits, ensure the tax system supports rather than undermines entrepreneurship and enterprise, manage the monetary system so that the rate of inflation is consistent with world norms, and promote a trade and exchange rate regime that fosters international competitiveness.⁴⁶

Generating Human Capacity

Efforts to generate human capacity start with an assessment of the existing stock of human capital. For a country or region, this consists of the general population with its store of knowledge, skill, talents, and experience. Human capacities and human capital can increase in several ways. Two of these are population growth and net immigration. A third is improved health which increases longevity and raises productivity. Increased longevity extends the period over which an individual's skills and talents are rewarded and experience can accumulate. Improved health raises income by boosting productivity.⁴⁷ There are two channels. With more income, individuals have greater access to complementary inputs (equipment, information, materials, facilities, and other capable people). Rising income motivates workers to use their capacities more intensively and add to their capacity in anticipation of higher future earnings.⁴⁸

Time and resources (including human capacity) are required to sustain and enhance human capital and to ensure that individuals remain motivated and engaged. Education and learning, both formal and non-formal, are critical to this effort.⁴⁹ Formal education is the structured, institutionalized means of generating and improving human capacities. Non-formal education has the same effect though its activities are loosely structured and often opportunistic.⁵⁰

The literature on the role of formal education in capacity generation is extensive and will not be covered here. The functional value of education has been widely discussed.⁵¹ The performance of formal education depends heavily on the broader context from which its inputs are drawn and within which its graduates gain their livelihoods. This can be illustrated by reference to key dimensions of that context, poverty, health, nutrition, and non-formal learning.

Poverty, especially chronic poverty, is a major barrier to the expansion of formal education. Often large segments of the population of developing countries, the chronically poor are those "...who remain poor for much or all their lives, many of whom will pass on their poverty to their children..."⁵² Most children of chronically poor families work. Though their earnings are low, the amounts comprise a significant share of family income. Foregoing these earnings involves a high opportunity cost. The chronically poor experience food insecurity, are frequently ill, and are often marginalized

within society by location, ethnicity, age, or gender. As currently structured, EFA (and related programs), reach few of these people or their children. Generating human capacity among the chronically poor requires policies and actions that reduce the risks they face (to their incomes, food supply, and health) and raise their minimum secure standard of living.⁵³ Without the prospect of improved security and evidence that it will be sustained, the chronically poor will not shift from what they know works.⁵⁴ Helping people break out of these circumstances requires much more than education. It is one reason why programs that pay families to send children to school and keep them there, despite their deficiencies, have gained attention and support.⁵⁵

For some groups, poverty is transitional. Harvest failure, floods, or civil strife interrupt income streams and deplete family assets. In Africa, for example, civil unrest has created a large number of internally displaced persons who are widely scattered in refugee camps. Many of these groups are being supported by the United Nations.⁵⁶ Its agencies provide emergency food and shelter. Where possible, the agencies try to re-establish stability as rapidly as possible. They do this by providing employment to parents and school for children. Resettlement is disruptive. Villages and their facilities, such as schools and clinics, often have to be rebuilt. The recovery period can extend over years making it difficult for displaced children to receive a quality education.

Poor people are often unhealthy. Being in bad health, they remain poor. Breaking out of this cycle requires additional health expenditure, which many agencies now see as an investment in human capital.⁵⁷ Improved health and rising income are jointly dependent. Healthy workers are more productive. Healthy children are more active and engaged learners and more capable of remaining curious once their formal schooling ends.⁵⁸

Improved nutrition boosts health and learning outcomes. Studies in Brazil of the longer-term education impacts of nutrition supplements provided to pre-school children yielded significant net benefits in the form of lower repetition rates. Children from poor households who attended pre-school (and received the supplements) learned more effectively in primary school and had higher rates of completion than children who did not.⁵⁹

Maintaining education quality is a constant challenge. Motivation and morale are frequently compromised by attempts to push the formal education system beyond its limits of staff, finance, facilities, and administrative capacity. Beginning in the 1950s, many developing countries rapidly expanded the scale and scope of their education systems. Consequently, most of them are now far more advanced in terms of student participation at the primary and secondary levels than rich countries were at the same income levels. The expanded access, however, has generally come at the expense of education quality.⁶⁰ Problems created by low quality are widespread. As noted below, the experience of Uganda, Kenya and Malawi, all of which mandated UPE, shows that as access expanded quality slumped. Other countries (like Honduras) are having difficulties improving quality despite devoting large shares of their expenditures to education and offering incentives designed to increase the quality of teaching.⁶¹

Non-formal education supplements formal education in vital ways. The major advantage of non-formal education is its flexibility. Timing, location, format, and participation can all be modified so as to extend learning across broader segments of the population. Yet, like formal education, non-formal approaches are compromised by poverty, ill health, and hunger.

An important function of non-formal education is to build upon the individual's existing knowledge in ways that inculcates the habit of life-long learning.⁶² Research demonstrates that the majority of what individuals come to know throughout their lifetime is acquired outside of formal education settings.⁶³ Non-formal education is often a crucial part of this extra-curricular skill enhancement and knowledge accumulation. As the nexus between knowledge generation and economic growth strengthens, non-formal approaches have become essential means of enabling workers (and the population more generally) to adapt to competitive pressures by upgrading, revamping, refining, and even rebuilding their skills.⁶⁴ The internationalization of markets has placed a premium on the ability of workers to adjust to changing labor market conditions. Formal education provides the foundation of skills and knowledge to compete. In many instances, however, it is the habit of life-long learning (reinforced by non-formal education) that enables workers to adapt and often thrive as conditions changes.⁶⁵

These pressures affect how particular specialties and disciplines generate capacity. For example, capacity building in Science and Technology (S&T) used to be "...bolted onto existing research programs."⁶⁶ That approach was consistent with the "conventional thinking" that S&T should provide "...straightforward answers to well-defined problems that [would] then flow simply to commercial innovation or public policy."⁶⁷ Now seen as ineffective and rigid, recent approaches to S&T capacity building have shifted to a network model that responds to local demands, emphasizes coordination, and promotes long-term activities. The goal is to create networks of researchers who foster innovation and flexibility by taking advantage of local centers of excellence.⁶⁸

The "new [knowledge] economy" places special demands on human capacity generation. Rooted in globalization, innovation, competition, and the more intensive use of information and communication technology, the expansion of knowledge has enabled some low-income countries to gain more rapid access to technologies that, among other things, allows them to offset former disadvantages posed by distance.⁶⁹ Educators now have to become engaged in ways that connect students to the broader world, provide access to new knowledge, raise material standards (textbooks in particular), and foster understanding of the skills and techniques that enable individuals, families, communities and societies to remain competitive. The objective is to enable those who are trained to be flexible, adaptive, and value ongoing learning and skill enhancement. In response to international competition, many countries are restructuring their economies and seeking to change the type of education they provide. As a 2001 World Bank report noted⁷⁰:

...the new economy calls for changes in education: not just more education, but substantially different education. Beyond the mastery of basic subject matter, numeracy, and literacy, success in the new economy requires behavioral skills such as the ability to think critically, communicate well, and work effectively in teams. Creativity, risk-taking, entrepreneurship, flexibility in the face of change – are increasingly important. Computer literacy, too, has become a core competency.⁷¹

Using Human Capacity

With “so little done and so much to do” to promote economic growth and social development (to borrow Carol Lancaster’s evocative line)⁷² one might expect that human capital and human capacity would be employed as productively and intensively as possible at all times. This is not the case especially in the poorest countries.

The use of human capacity is determined primarily by demand. The demand for human capacity is derived from what can be produced. Private individuals and firms demand human capacities (i.e., they create employment) if they expect to exchange the goods and services being produced for a return that covers their effort, resource inputs, and risk.⁷³ Private entities will increase their demand for human capacity (i.e., expand employment) if they are confident that the higher levels of output can be disposed of profitably.

Public entities, such as government ministries and departments, and state-owned enterprises, have a derived demand for human capacity as well. These organizations are typically required to provide goods and services (education, health care, security, customs control, sanitation) on the scale and scope determined by political, legislative, and statutory processes. All governments have the power to tax and print money. This makes the public sector’s resource envelope more flexible than that of the private sector, especially over the short term. Since all real resources are scarce, policy makers and public sector managers need to avoid activities that persistently subtract value.⁷⁴

Accordingly, the use of human capacity depends on the ability of private individuals and firms to generate and sustain a surplus, and by the public sector, at a minimum, to avoid activities that destroy value. Since there are many potentially profitable and value-enhancing activities available, both sectors have considerable leeway in organizing their use of human capacity.

Comparing how human capacity is used across countries is revealing. The average worker in the richest countries has many skills, is highly paid by international standards, and within the constraints of macroeconomic “fine tuning” is fully employed.⁷⁵ Furthermore, since these workers are healthy and have long life expectancies, they are encouraged to enhance their skills.⁷⁶ By contrast, the average worker in the poorest countries has few skills, is poorly remunerated, and regularly experiences periods of under- and un-employment. With relatively poor health and lower average life expectancy, these workers have few incentives to add to their skills. One explanation for

these differences was noted earlier: better-educated workers are more adaptable and respond more readily to shifting market conditions.

A further problem in poor countries is the negative feedback due to the lack of human capacity, especially in administration and management. With weak capacity, economic growth is blocked and, without growth, the private sector has few incentives to generate and use additional human capacity. Moreover, without growth, the public sector lacks the real resources needed to expand its use of human capacity as well.

As noted earlier, governments and donor agencies have made extraordinary efforts to generate human capacity with some countries successfully boosting economic growth and development. For most poor countries, however, this strategy of “build the capacity and it will be used” has not worked. They have failed to create a context conducive to the absorption of the newly created capacities. As a result, human capacity in many countries has been under-used, misused or, most often, not used. The evidence is widely available. Pressing tasks that would benefit the whole community remain undone. Children remain un-immunized, water and sanitation that would improve public health is not provided, controls that would prevent public officials from embezzling public funds are not implemented, and the economy is not managed in ways that would spur investment and growth.⁷⁷

How could this change? What is required for existing human capacities to be fully employed on tasks that increase income, create wealth, and enhance welfare? How can those tasks be organized so that the private and public sectors have the incentive to use productively the available store of knowledge, skills and talents?

One of the most constructive approaches is for governments to adopt policies that build upon the positive aspects of competitive markets and public intervention. (Annex 3 provides details.) Indeed, there is now widespread evidence that countries that have grown and developed rapidly have sought and achieved a “pragmatic balance” between the operation of competitive markets and public intervention.

Private and public sector performance are typically measured against three benchmarks – efficiency, equity and effectiveness. The efficient allocation of resources, i.e., achieving a given objective at the lowest resource cost, is fundamental to economics. Without attention to efficiency, resources are wasted. This reduces growth and welfare. Equity is a crucial social objective with two dimensions, horizontal and vertical. Horizontal equity requires the same treatment for individuals and groups in similar circumstances. Vertical equity implies that better-off individuals and groups bear a larger share of any burden, or receive a smaller share of any benefit than those who are less well off. Effectiveness is a measure of organizational competence reflecting the degree of coherence between the goals of a public policy and the actual outcomes.

All activities involve trade-offs among the three. This was illustrated by the expansion of primary education in Malawi, Kenya and Uganda during the 1990s. Each government

decreed that all children would attend primary school. To hasten the process, the government removed fees and some other charges. Primary school enrolment increased dramatically. Horizontal equity improved. But, due to a marked increase in class size, inadequate numbers of qualified teachers, and the lack of physical facilities, the quality of education fell sharply.⁷⁸ The gap in standards between the public and private schools increased. Vertical equity worsened. Primary school completion rates have not increased commensurately with enrolments. The policy has been inefficient and, when viewed in terms of increasing graduation rates, ineffective. Further inefficiencies will emerge over time. The massive expansion of enrolments has increased the need for remedial education so that those who complete primary school can catch up to where they would have been if the quality of education had not fallen.⁷⁹

Many of the problems encountered in expanding primary education in these countries can be traced to deficiencies in managerial, administrative, and organizational capacities. The tasks have been beyond what Kenyan, Malawian, and Ugandan educators (despite their best efforts) could handle. These deficiencies reflected an even more pressing problem. Senior policy makers (from the respective presidents down) failed to foresee the pressures each education system would encounter when enrolments rose, or to understand the additional skills and resources required to deal with those pressures. This was a failure of strategy. If these countries had been appropriately managed and administered, their governments would have not mandated UPE. Or, having decided that UPE was indispensable to national development, the governments would have cut their development agendas thereby freeing up the necessary resources (finance, human capital, and organizational capacity). This would have allowed education to expand without undermining quality⁸⁰ or compromising the provision of other vital public services. Having taken neither of these steps, the adoption of UPE compounded the problem of agenda overload further undercutting the performance of the public sector.

This example highlights the more general point that improvements in management and administration are essential if the use of human capacity is to expand. Several elements are relevant: matching skills to tasks so that quality services are produced and delivered; aligning work-flow with the skills and time available; varying the balance among permanent and temporary staff as skill mixes and work-load changes; ensuring that incentives (pay, conditions, team assignments) maintain morale and encourage initiative; and understanding how new technologies and techniques can be integrated to enhance organizational performance.

The last point poses a special challenge in developing countries since so few managers and administrators are familiar with the potential (both positive and negative) of science and technology. Progress can be made if managers and administrators are helped to recognize that potential and the types of changes in the skill mix required to use effectively the new technologies. New staff members with the relevant skills need to be hired and/or existing staff members retrained. Shifting technologies (and the changing market conditions that induce their adoption) make some skills obsolete. To avoid disruption, areas where this is occurring need to be identified and work flows

reorganized. The latter will involve on-the-job training, including specialized instruction. It is here that lifelong learning discussed above is essential especially for managers and administrators so that they, too, can adapt to changing conditions.

Managers and administrators now recognize that the adaptability boosts productivity and that *how* workers create is critical to *what* they create. The digital revolution has been modifying how workers communicate, collaborate, network, innovate, and create. This influences how knowledge is generated, absorbed, shared, and enhanced. Multi-tasking, parallel processing, flexibility and adaptability are becoming the norm in handling knowledge and information.⁸¹

Improvements in management and administration need to be supported. Policies that stimulate growth and remove barriers to employment creation are critical. Graduating students in many poor countries often confront barriers that prevent them from finding remunerative employment. This point was dramatized at the Youth Employment Summit in Alexandria Egypt in 2002 through the launch of the YES Campaign 2002-2012.⁸² Many societies are finding youth unemployment difficult to overcome.⁸³ Besides creating more employment, it requires action to counteract gender discrimination in the access to productive resources, the reorganization of education and training to emphasize entrepreneurship and self-employment, and complementary improvements in infrastructure to enhance worker mobility.

Gender discrimination is widespread. Large numbers of studies, particularly related to Africa, show that women grow most of the staple foods, provide care for the sick and disadvantaged, fetch water and fuel, and earn income to pay school fees. Men tend to engage in long-distance commerce, cash crop production, livestock management, and housing construction. The rigidity of these roles breaks down the deeper families sink into poverty. This has become increasingly evident in the responses by families to the losses (of husband, wife, or child) due to HIV/AIDS and their struggles of households to recover in the face of shocks and disruptions.⁸⁴

In some societies, gender issues will become increasingly important over time. Over recent decades, Asian societies, particularly China and India, have experienced major shifts in the gender ratio. This can be traced to public policy (China's one-child policy) and family choice (the preference for male children). Estimates suggest that by 2010, China will have 100 million more males than females in 2010.⁸⁵ Relatively fewer women will be available to undertake traditional tasks and modern sector jobs requiring dexterity and skill lacking in male workers, or for which they are not conditioned. The implications of these trends, especially for education and training, are not well understood. What is unclear is whether the growing gender imbalance will intensify discrimination against or in favor of female workers. Either outcome will affect how female human capacities are used.

INDICATORS OF HUMAN CAPACITY

The challenge is to identify the relevant education-related activities related to the generation and use of human capacity. The framework described below helps do this. The general approach has appeared several settings – measuring education access, assessing education performance, gauging education quality, and describing poverty.⁸⁶

The EFA *Global Monitoring Report* analyzed the progress towards EFA under four headings: context, inputs, process, and outcomes.⁸⁷ Contextual indicators measure how the economy and society provides inputs, sets standards, and sustains educational reform. Context also includes community actions that strengthen the education system. Input indicators relate to the supply of qualified teachers, teacher availability (particularly in rural areas), the pupil-teacher ratio, books per student, and recurrent budget expenditure per student. Process indicators refer to enrolment, dropout, repetition, and completion rates, curriculum content, and the education choices made across gender and income groups. Outcome indicators include results reflected in test scores, public examinations, and comparisons of learning achievement across regions and internationally (when appropriate).

The Global Poverty Report traces the “shape of multi-dimensional deprivation” using an indicator approach (based on a five-dimensional radial graph) for a range of countries.⁸⁸ The indicators are severe stunting, under five mortality rate, adult female illiteracy, the probability of dying before the age of 40, and the proportion of the population living on less than \$1 per day. Countries are classified by the size of the deprivation pentagon. In 2004, Mozambique was classified as desperately deprived, Ghana moderately deprived, and Bolivia relatively non-deprived.

Indicators also track education quality.⁸⁹ The dimensions are education access, coverage, gender parity, internal efficiency, quality of inputs, quality of outcomes, impact on equity, and where relevant, the effect of HIV/AIDS on education. Indicators of access and coverage include enrolment rates for boys and girls, by region and across rural and urban areas. (When recombined these data measure gender parity.) Indicators of internal efficiency relate to repetition, completion, and dropout rates.⁹⁰ Indicators of input quality refer to the status (qualified/unqualified) of teachers (and administrators), the availability and relevance of instructional material, pupil-teacher ratios, and the physical standards of the schools, facilities, and related amenities. Indicators of output quality are based primarily on student achievement measured by test scores.⁹¹ Equity indicators, as noted earlier, relate to gender parity (one of the MDGs for education), and efforts to reach the chronically poor, typically ethnic minorities, the disabled, dispossessed, or geographically isolated. Equity also covers non-discrimination. In high HIV prevalence countries, AIDS orphans are often singled out or shunned.⁹²

A third example is the World Bank’s Indicative Framework for EFA.⁹³ The framework provides benchmarks for participating countries and their donors against which to measure progress towards UPE and EFA. The indicators are average teacher pay (as a

multiple of per capita GDP), the pupil-teacher ratio, share of recurrent spending on inputs other than teachers' salaries, average repetition rate, education share in the government recurrent budget, and the primary education share of spending on education.

Each of these approaches is a useful guide to the performance of education. Some practical difficulties need to be considered. Data and definitional problems are common. Because demand and supply systems are interlinked, it is sometimes difficult to determine whether a particular factor relates more directly to supply or demand (or more broadly generation and use) of human capacity.⁹⁴ Even if the interactions are recognized, the relevant data may not be available. For example, data series on participation in primary, secondary, and tertiary education and completion rates from these levels are regularly assembled. By contrast, few data exist on the quality of graduates, or their post-education productivity. Obtaining these would require "tracer" data on earnings, employment longevity, promotion rates, employee flexibility in the face of competition, and adaptability to new work situations. Data linking school graduates to the national earnings profile are rare at best. Analysts compensate by using proxies (i.e., indicators that are highly correlated with the relevant but difficult-to-measure variable). This procedure biases the results since no proxy perfectly "stands in for" the desired variable. Without proxies and creative fudging, much of the current empirical analysis at a national level would be impossible. Despite these problems, the indicators proposed here are simple, tractable, and when necessary they can be readily supplemented with further analysis. Annex 4 has details.

Generation of Human Capacity: For convenience, we have drawn together the many factors that influence the generation of human capacity under five headings: access, quality, investment, performance, and context. Education access is reflected in the percentage of an age cohort in early childhood development, or primary school, or secondary school, the gender ratio across primary and secondary grades, and other variables that signal the ease (or otherwise) children have attending and remaining in school. Education quality focuses on the student-teacher ratio and the share of teachers who are trained, as a means of illuminating the knowledge children gain by attending school. Education investment measures the inputs into education, largely represented by share of the general budget allocated to education and the share of the budget spent on primary education. It is designed to illustrate the support being provided to education as part of the overall development effort in each country. Measures of education performance such as the primary school completion rate and transition rates from primary to secondary school relate to the ability of the school system to foster learning that reaches recognized standards. The context variables, such as the rate of urbanization and life expectancy at birth, include dimensions of the broader setting in which human capacity is generated.

The Use of Human Capacity: Indicators related to the use of human capacity are grouped under five headings as well: economic performance, governance, poverty, workplace, and infrastructure. Indicators of economic performance include the rate of income growth, savings, investment and debt as a gauge of the degree to which economic

activity will boost the demand for human capacity. Governance indicators such as those related to corruption and business risks highlight how issues such as accountability, transparency, and openness will influence how human capacity is used. Indicators of poverty such as female life expectancy at birth and the population share with (adjusted) incomes above \$1 per day measure how deprivation compromises the use of human capacity. Finally, infrastructure indicators such as phone and Internet access and the proportion of roads that are paved, give some idea of the physical facilities available to complement the use of human capacity.

The indicators used are highly selective. Many other measures could be used as well. The goal, however, has been to focus on a few key variables, taking into account other efforts currently underway. To the extent possible we have drawn on the indicators being used to determine progress towards the Millennium Development Goals, to gain access to Millennium Challenge Account resources, to conform to EFA guidelines, and to counteract chronic poverty. Annex 5 has a detailed overview.

A FRAMEWORK FOR ANALYSIS

The framework presented here examines the links between the generation and use of human capacity, and how these relate to education. The data are organized utilizing radial (or spider) graphs. For an individual country, the graphs plot changes over time. For two or more countries (including a relevant comparator), they provide comparisons at a single point of time. Juxtaposing or overlaying the data highlights areas of progress or regress. Trade-offs and complementarities among the activities stand out. For example, the results below show that progress towards net primary completion (an MDG) is undermined by poverty (as evident in the large number of children who work) and low levels of female literacy (the result of previous and current barriers to education). The exercise provides a basis for formulating policies to strengthen the education system, boost learning outcomes, and expand opportunities for human capacity development more broadly. The results presented below are based on aggregate data. This is for convenience only since the framework can be readily applied to data from all levels, household, community, province or region.

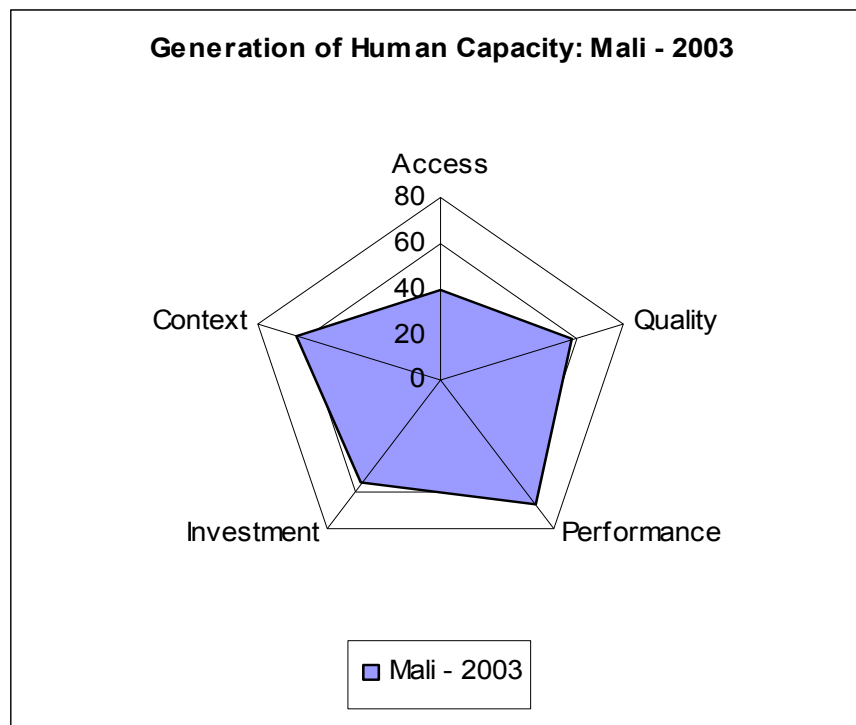
Again, for convenience, illustrative data relate to a single country, Mali, for the period 1990 to 2003.⁹⁵ Each radial graph has five indexes composed of a number of indicators. . None of the choices is immutable. Our intention is to illustrate the technique rather than confirm the suitability (or relevance) of each category. Other analysts are free to use their own.⁹⁶

The radial graph immediately below refers to the generation of human capacity in Mali in 2003.⁹⁷ The index for education access comprises indicators for gross primary enrolment and children aged 10-14 outside the labor force. For education quality, the index includes the student-teacher ratio (relative to the SSA norm) and adult female literacy. The index of education performance includes the primary completion rate and the secondary and

tertiary enrolment rate (relative to the SSA norm). The index for education investment consists of per pupil expenditure as a share of GDP and public expenditure on education (relative to the SSA norm). The context index includes the adult female HIV/AIDS prevalence rate (relative to the SSA norm), the degree of aid independence (relative to the SSA norm), and the share of the population having access to potable water.

Although Annex 5 has a more detailed discussion, it is useful to briefly describe why each indicator is relevant and how it relates to the generation of human capacity. Children who are working do not have regular access to school even if places can be found for them. The low gross enrolment rate (together with the high student-teacher ratio) is evidence that primary school places are limited. There is continuing debate in the literature over the relevance of class size to education performance. There is little doubt, however, that class sizes in Mali (25 percent above the SSA average, a level that already is high by international standards) undercuts learning achievement. A well-established result is that low adult female literacy (12 percent in Mali) has a major negative effect on children's school attendance and their learning achievement. Primary completion is a critical education outcome. All developing countries are committed to reaching this MDG. The combined secondary and tertiary enrolment (exceedingly low in Mali even by SSA standards) is a major barrier to the expansion of education. When only 2 percent of the relevant age cohort participates in tertiary education, neither the education system nor the economy as a whole can have the teachers, administrators, technicians, managers, and other professionals required to create a dynamic setting where human capacity generation can expand rapidly and be used productively. Investment data provide no information on the efficiency of resource allocation or whether the expenditures promote equity. With expenditure levels below SSA norms, Mali is not investing vigorously in human capacity. A low rate of urbanization is typically associated with limited human capacity generation. Restricted access to potable water is indicative of widespread poverty, a point already confirmed by the large share of children who work. High rates of HIV/AIDS among the adult population undercut human capacity (both its stock and the incentives for its generation). So far, Mali has been relatively untouched by this scourge.

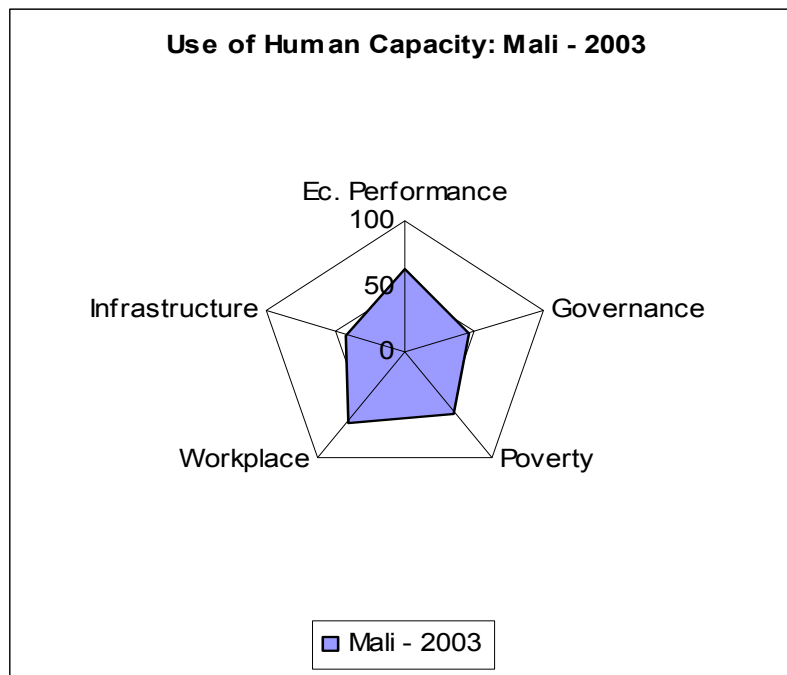
The data in the radial graph depict a system under stress. None of the measures is high, especially since most of them have been related to SSA averages. Education performance and quality rank ahead of access and investment. One positive element is that the broader context (measured by the degree of urbanization and health) has not been an additional drag on the generation of human capacity. This implies that the main challenge to generating high quality human capacity lies within the education system. An area of concern would be the low secondary and tertiary enrolment and achievement. Significant improvements in these dimensions will be required if the whole education system is to move forward.



Turning to the use of human capacity, the radial graph below provides several insights. Indicators of economic performance include the country risk index, the PPP-adjusted income per capita (relative to the SSA norm), the gross domestic savings rate (relative to the SSA norm), and the debt to GDP ratio (relative to the World Bank norm for severe indebtedness).⁹⁸ Indicators of governance consist of the non-corruption index and one minus the Gini coefficient on income (as a measure of equality). The indicators for poverty (and deprivation) include the share of the population living on more than \$1 per day, the female life expectancy at birth (relative to the SSA norm), under five mortality (relative to the SSA norm), and the share of well-fed children (as measured by height for age). Workplace indicators comprise children outside the labor force, agricultural productivity (relative to the SSA norm), literacy rates of female youth (15-24 years), and the stringency of labor regulation (relative to SSA norm). Infrastructure indicators are the degree of urbanization, phone connections per 1000 people (relative to SSA norm), the proportion of the road system that is paved, and radios per 1000 people (relative to the SSA norm).

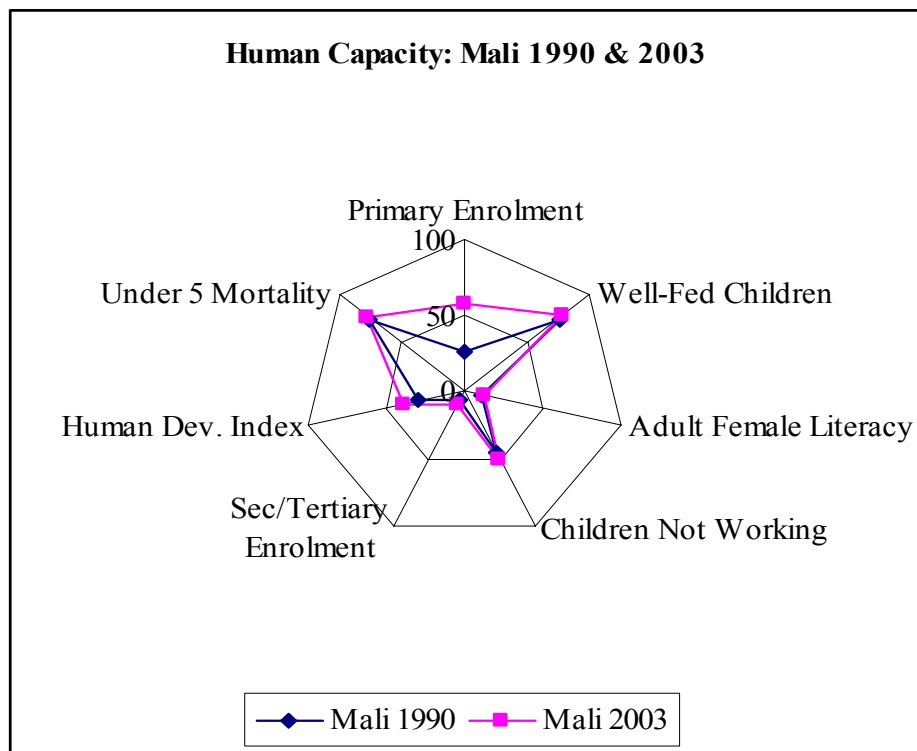
None of the indexes is robust. Positive factors are economic performance (helped in part by rising income during the 1990s as a result of economic reforms), progress in youth literacy, and the selective removal of barriers to employment. These, however, are offset by the limited infrastructure (with fewer than 30 phone lines per 1000 people and only 12

percent of the road surface paved), high rates of poverty (reflected in an under 5 mortality more than double the SSA average, and barely a quarter of the population living on more than \$1 per day). Weak governance is evident in perceptions of widespread corruption and a distorted distribution of income.



Taken together these two sets of data show that boosting the generation and use of human capacity in Mali face formidable barriers. Poverty is the most obvious constraint. Large numbers of children work. Many of them are under-nourished and chronically ill. Little progress will be made with primary school completion unless these problems are ameliorated. What are the prospects this will happen? Is Mali's economy making headway in this area? This is examined in the following radial graph. It has indicators from 1990 and 2003 to highlight areas of progress.

Gross primary enrolment increased sharply more than doubling from 26 percent to 57 percent. Whether the quality of education also improved is not clear. Fewer children aged 10-14 were working with the share falling from 62 percent in 1990 to 50 percent in 2003. Some (marginal) progress in child nutrition occurred. Finally, reflecting a rise in the rate of economic growth, the Human Development Index increased as well.



A number of regressive trends are evident. The under five mortality increased (relative to the SSA average). Mali lost ground in this key health dimension. Despite a relatively large increase in the degree of urbanization (a change that usually encourages broader participation in education) there was no significant increase in adult female literacy. It rose from 10 percent in 1990 to 12 percent in 2003. Further examination reveals that Mali lost ground in this area. Male youth literacy declined from 38 percent in 1990 to 32 percent in 2002 while female youth literacy remained at 17 percent.

These data could be readily supplemented. The basic conclusion, however, would not change: Mali's economy has lacked the dynamism to generate and use large amounts of human capacity. Nothing in present indicators suggests that this situation will change dramatically. Over the next decade, the principal factors constraining the expansion of education in Mali will continue to be poverty, food insecurity, ill health, and low education quality.

CONCLUDING COMMENTS AND FUTURE DIRECTIONS

To sustain progress, all nations have to efficiently generate and use human capacity. Guided by the Education For All targets and the Millennium Development Goal of achieving universal primary school completion by 2015, developing country governments are emphasizing the generation of human capacity. This emphasis is not being matched

by similar efforts to create conditions that will ensure the newly generated capacity will be used productively.

This imbalance in emphasis is easy to understand and rationalize. Governments have a great deal of control over the generation of human capacity. They can build schools, hire teachers, design curricula, and through international summits induce the donor community to provide additional finance for these activities. By contracts, governments have far less control over the processes that ensure human capacity is employed. This would require governments, independently of donor intervention, to foster policies that stimulate economic growth. This is not an area where the poorest and most aid-dependent developing countries have succeeded. A major reason for the lack of success in promoting economic growth is that policymakers, often with the urging of the donor community, have been attempting to implement development agendas that are well beyond their country's (human, financial, organizational, and institutional) capacities. Failure to grow and develop has been pre-programmed.

Development priorities need to be reordered. Since high quality human skills remain in short supply in poor countries, the generation of human capacity should remain a priority. A constructive approach would be to fully engage the private sector in this effort. To do that will require a loosening of public control over education and training and the adoption of growth-oriented policies that induce private individuals to seek additional education and training. The goal is to initiate a virtuous circle of improved growth prospects that leads to further education and training that, in their turn, add to growth. Once human capacities begin being used more effectively, individuals and families, encouraged by higher expected incomes, would invest in education, skill enhancement, and knowledge accumulation. That investment would provide a further boost to the generation of human capacity.

The results of the indicator analysis in this paper raise several questions that merit further study. First, can universal primary completion (the MDG) be achieved independently of efforts to reduce poverty? Second, if children continue to work, remain under-nourished, in poor health, and do not have the encouragement of literate parents, how will they find the time and resources to attend primary school? Third, what will children learn that is useful for their livelihoods if they are crowded into decrepit facilities, with more than 50 students to a class, without teaching materials because school budgets are under-funded, and instructed by minimally qualified teachers in schools that are poorly managed because administrators have been inadequately trained?

Fourth, what changes in the education system will ensure the achievement of universal primary completion without the simultaneous promotion of secondary and tertiary education? Fifth, what modifications are required in secondary and tertiary education to support the attainment of UPC? Sixth, to what extent can foreign aid be used to induce individuals, families, and firms to invest in education and training in developing countries while their economies fail to grow? Seventh, what conditions are required for additional foreign aid devoted explicitly to primary education to boost learning achievement?

Eighth, in situations where HIV/AIDS is undercutting human capacity, how can foreign assistance be used to help scale back the development agenda in ways that match the diminished availability of skills and talents? Ninth, what conditions are required to encourage the private sector to expand education and training, so that the overall progress towards UPC can be maintained? Tenth, how can private sector help boost public sector capacity in ways that improves the generation and use of human capacity?

The Calculator framework presented earlier provides a starting point for addressing these questions. It will highlight the opportunities available to particular countries. It will also help identify the tradeoffs and major constraints. In both cases, it will enable policymakers and the donor agencies supporting them to more clearly focus on activities that expand the relevance and enhance the reach of education.

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Annex 1: Demand and Supply⁹⁹

Theoretical models of demand relate the quantity of a bundle of goods and services demanded (such as a year of primary education at a particular school) to the prices or charges involved (school fees and related payments, transport costs, uniforms, books, and the opportunity cost of time), the prices of alternative activities (especially potential earning opportunities foregone), income, and wealth (or accumulated savings). These models characterize a decision process in which the consumer is presumed to weigh the relative costs of education against the expected returns in ways that are consistent with his/her preferences, income, and wealth. Since the expected returns to education emerge over an extended period, this requires consumers to have information about the gains accruing to additional years of education. That information is usually widely available through the experience of family members, neighbors, and other acquaintances. Consumer preferences, which shape his/her behavior, are determined by experience, current circumstances, his/her expectations of the future, and attitudes to risk.

Economists distinguish between nominal and effective demand. The nominal demand for education is the amount of education (or other goods and services) that each individual or family would desire if there were no constraints (income, wealth, time, or distance) to expressing that demand. The effective demand for education reflects the quantity of resources (finance, time, and other inputs) that each individual or family devotes to education given their constraints. The effective demand for education is evident in aggregate enrolments, school books purchased, resources used to transport children to and from school, the parents' time and effort devoted to school-related matters, and the extra-curricular activities (including paid tutoring) that families provide.

Explanations of the supply of particular goods and services (such as a person-year of schooling in a particular grade at a specific school) highlight issues of capacity, i.e., the physical and human resources available to produce the goods or provide the services, the resource costs of producing or providing them, and the decision processes by which future demands for those goods and services will be met. The latter point is critical. All social and economic activities require preparation and anticipation. Schools and school systems do not materialize simply because parents expect that education services will be provided. Modern education systems (especially in developing countries) have expanded largely through the decisions of public authorities to allocate regularly over time sufficient resources to provide access to education to a growing fraction of the population. Yet, even with this effort, school attendance rates in developing countries are significantly lower than those in developed countries. The implication is that access to education is supply-constrained, limited by the lack of adequately trained teachers and administrators and school facilities.

School attendance, however, is not simply a matter of supply. Demand factors are relevant. Because schools in poor countries cannot deliver high quality education

services, the children of many wealthy families are educated abroad. That option is not available to the less well-to-do. Their children are educated locally. Nonetheless, some parents and families are so poor that they are unable to send their children to school. By not being able to attend school, these children reduce the pressure on the existing facilities even though when judged by the high pupil-teacher ratio, the limited availability of text books and so on, they are already over-crowded.

The effective demand for education determines the degree to which education facilities are used while the principal impetus for the expansion of education comes from the supply side. In the majority of developing countries, the expansion plans bear little relation to demand. Typically, public officials base their plans on projected population growth primarily in urban areas (which, for political reasons, receive favored attention), budget pressures (especially the wage bill), and anticipated flows of foreign assistance. As noted in the text, some countries (Malawi, Kenya, and Uganda) introduced universal primary education independent of capacity and resources. Class sizes increased dramatically and the quality of education declined. This was not what parents and families had demanded (or expected). It was, however, what the respective governments supplied.

Annex 2: Growth Accounting and the Value of Human Capital

Growth accounting studies¹⁰⁰ show that increases in real income per capita are related to the accumulation of productive factors, improvements in the productivity of those factors, and the reorganization of economic activities that sustain accumulation and productivity improvements. With the increased availability of data, especially at the micro (economic and social) levels, evidence is emerging that the accumulation of physical factors such as plant and equipment and infrastructure is far less significant for growth and productivity than gains in information, knowledge, and improved management and organization. These points are highlighted in a recent study by Federal Reserve Bank of Dallas.¹⁰¹ Drawing upon two centuries of U.S. data, the study highlights the factors contributing to economic growth at the micro level (investment, innovation, education and training, competition) and the macro level (reorganization and trade). From 1870 to the present, U.S. productivity growth has averaged well over 2 percent per annum. Central to this change has been the steady accumulation of human capital resulting from education and training and the more effective use of that human capital through restructuring and reorganization.¹⁰²

With increased attention on the role of human capital, analysts have made major efforts to improve its measurement. The work of Dale Jorgenson and his associates stands out.¹⁰³

Jorgenson *et al.* use a broad measure of human capital. It is the discounted stream of full income of an individual "...in a given sex, age, and education category." Full income is defined as "...labor income plus imputation to leisure time...."¹⁰⁴

Human capital per capita “...at a particular age [is] ...the annual income at that age, plus the discounted human capital of a person a year older.” This calculation combines the market value of labor income over a given period and the discounted value of wage and non-wage income adjusted by the age-specific survival rate, the school enrolment rate, and the discount rate. The gross value of human capital is the aggregate of the estimated human capital per capita multiplied by the number of people in each skill, age, and education category. To obtain a measure of the stock of human capital that is relevant to growth accounting analysis, this gross measure is adjusted by “...investment, depreciation due to aging, births, immigration of new residents, and deaths.”¹⁰⁵ $H(t)$, the total human capital stock at time t , is given by:

$$H(t) = \Delta N + (1 - \delta) H(t-1) + I(t)$$

Where ΔN measures “...the exogenous changes in the stock of human capital due to births, deaths and net immigration”; δ is the rate of depreciation of human capital, and $I(t)$ is total gross investment in human capital.

Annex 3: Market Outcomes and Public Policy

Public policy interventions are designed to change specific outcomes or yield particular effects. In any mixed society, the operations of a market generate income and add to wealth. These, in turn, improve economic and social welfare. Subject to well-known conditions about participation, competition, and information availability, market outcomes are efficient, i.e., they result in the best possible allocation of inputs and outputs that can be derived given existing technology, consumer preferences, the attitudes to risk of producers, and the existing distribution of income and wealth.¹⁰⁶ Under these circumstances, no other allocation would leave any individual better off without making some other individual or group worse off. Yet, only a fraction of the transactions in an economy take place in established markets.¹⁰⁷ Moreover, although markets are efficient (in the sense noted above), there is nothing inherent in their operation to ensure that the resulting distribution of income and wealth will be socially acceptable (or fair).

Competitive markets enable participants to mutually benefit from exchanging goods and services. Markets fail for several (well-known) reasons – asymmetric information among the participants, externalities, monopolies, transactions costs, and the existence of public goods.¹⁰⁸ The upside is that appropriately designed public intervention can remedy market failures. A common example is infrastructure. No individual (or group of individuals) will supply the infrastructure (roads, bridges, sewerage, and drainage) for a modern society to thrive. Public support is necessary, and efficient. The downside is “bureaucratic failure.”¹⁰⁹ This occurs when public intervention exacerbates rather than remedies problems created by the market. For example, rent controls designed to make housing “affordable” frequently reduce the supply of low-cost accommodation; subsidized water fees to help small farmers increase their food production result in waste

and misallocation; over-valued exchange rates that keep the urban cost of living low, undermine exports typically of farmers who collectively are far poorer than urban wage earners; and removing school fees to expand access to education reduces the resources needed to maintain education quality.

A further problem is that market outcomes may not fully reflect social priorities.¹¹⁰ This was illustrated by a survey of the general public's development priorities in seven Southern African countries (Botswana, Lesotho, Malawi, Namibia, Zambia, and Zimbabwe).¹¹¹ Contrary to the pre-survey views of local policy makers and donor representatives, HIV/AIDS was not a top priority in any of these countries. Job creation and the economy ranked well ahead of education, poverty, health, crime/security, food, transport, agriculture, and housing. Health was the foremost concern in only one country (Zambia) and even here it was only marginally ahead of job creation. The main concern in all countries was the lack of employment. Each country was making major efforts through education and training to generate additional human capacity. By contrast, none of them was focusing on how to use that capacity or create the conditions (such as rapid economic growth) where that capacity could be used.¹¹²

Market operations always produce winners and losers. Some losses may be catastrophic. Modern societies do not readily accept that outcome especially if large numbers of people are affected. Responding constructively, public authorities act in ways that complement market outcomes. This involves the public provision or sponsorship of goods and services that do not emerge from the operation of private markets. It also requires intervention to ensure that goods and services produced under market conditions are distributed in ways that satisfy criteria reflecting fairness and balance.¹¹³

Public sector actions, like their private sector counterparts, also create winners and losers.¹¹⁴ Efficiency (as defined earlier) is diminished by efforts to improve equity, and vice-versa. A key element in this trade-off is the notion of "effectiveness," a measure of the coherence between the stated goals of policy and the actual outcomes.

Public action has another potent effect. It changes the behavior of individuals, families, and firms. Public intervention confronts them with a different set of constraints and opportunities. If they expect the intervention to persist, the individuals, families and firms will respond by changing their behavior. That, of course, is the intention of the policy. Problems arise when the new behavior has adverse consequences. One reason for the unintended outcomes is that relevant information on individual wealth and preferences is limited (and too costly to assemble). The information gap provides opportunities for individuals and families to misrepresent their circumstances as a means of gaining access to publicly-supported programs. This has several implications. Public programs can be mis-targeted. Individuals or groups may gain even though they do not meet the relevant criteria for public support. Likewise, individuals and groups that should benefit are either missed, or fail to participate. Individuals and groups begin viewing public intervention as a "hand-out" rather than a "hand-up". This makes them dependent on continued public

sector intervention. Finally, governments are also subject to the same influences. This is the source of aid dependence.

Annex 4: Indicators and Social Analysis

Indicators are descriptive or anticipatory data used for economic and social analysis or prediction.¹¹⁵ They signal shifts in policy variables, monitor the impact of policy changes, and illustrate outcomes or trends that interest or concern policy analysts and policy makers. No single indicator adequately captures the complexity of social, economic, and political processes. Several indicators are usually required to illustrate their various dimensions.

A number of criteria guide the selection of indicators. The indicator needs to be highly correlated with the economic or social variable being analyzed. It has to be statistically tractable, currently available, and easy to assemble. Its preliminary estimate should be close to its final (revised) figure. The indicator should be related to the relevant policy variable (lagging, coincident with, or leading) in a consistent way.

Indicators are general or specific. General indicators include the rate of inflation, the rate of income growth per capita, the Gini coefficient (measuring disparities in wealth, consumption, or income), the volume of exports and imports, the rate of population growth, or the ratio of males to females in the population. Specific indicators include the primary school pupil/teacher ratio, the share of the population completing tertiary education, the primary school repetition rate, the number of trained physicians per 1000 people, and the adult HIV prevalence rate. These (and other) indicators describe public policy outcomes and/or guide public action.

For analytical purposes, a strong link is needed between the public policy activities (instruments) and the targets of policy.¹¹⁶ For example, experience and detailed empirical analysis show that budget deficits funded by money creation (government borrowing from the central bank) will generate inflation (a sustained increase in the aggregate price level). Similarly, it is widely documented that poverty prevents children from attending school and that ill, hungry children do not learn.¹¹⁷ When selecting the instrument of public policy (such as controlling the budget deficit or providing supplemental feeding and health care to school children), policy makers need to understand the links between the instruments and their targets. This helps deflect the criticism that indicator analysis is “measurement without theory.” It also enables policy makers to better understand the direct and indirect effects of their policies and the consequences of spillover and backwash effects.

Spillovers are inevitable in any social program. In some cases, they are desirable. For instance, a major rationale for public health programs or macroeconomic management is to generate and take advantage of spillover effects. Public sponsored vaccination and sanitation programs are intended to improve the health and welfare of the whole population. Public actions that reduce inflation help create and sustain the conditions

favorable to investment and growth. Improving the quality of education raises productivity and competitiveness throughout the economy.

In other cases, spillover effects undermine the efficiency (and effectiveness) of public action. For example, efforts to “help the poor” using price controls on staple foods, favored access to “cheap credit”, the elimination of school fees or the removal of fertilizer subsidies are only effective when the non-poor are excluded. That is not easy to accomplish. It is often difficult to distinguish the poor from the non-poor. With public action designed to reduce the cost of desirable goods and services (food, finance, education, and fertilizer), the non-poor have an incentive to misrepresent their status. Directing the benefits to the target group requires restricting access to programs, the monitoring of outcomes, and the application of sanctions to ensure that the non-poor are excluded.

Programs need to be sharply focused so their cost can be contained. It is inefficient, for example, to target poor families as a means of improving school attendance. The *Progres*a program in Mexico provides cash grants to poor families to induce them to send their children to school and keep them there. Yet, many children from poor families attend school without cash grants and large numbers of children from non-poor families do not attend school.¹¹⁸ Factors other than poverty constrain attendance – parent illiteracy, distance from school, whether siblings attend school, and the presence of a school nearby. To keep costs under control, targeting has to address these “education risks”.

A major drawback of targeted programs is dependence evident when the targeted individuals change their behavior so they can continue receiving benefits. In this way, temporary assistance can quickly become an entitlement. The fault is often program design. For instance, a food program in Ethiopia was designed to support families with undernourished children. Some families were discovered to be “gaming” the system by purposefully starving one of their children.¹¹⁹ Governments, too, become dependent. Africa has many examples. As a strategic matter, governments do not vigorously pursue initiatives that would generate growth and reduce poverty.¹²⁰ Their continued weak performance assures that the foreign aid will keep flowing. Donors accentuate the weak performance by adding to the already overloaded development agenda. Poor performance, in effect, is pre-programmed.

Indicator analysis encounters measurement and interpretation problems. One difficulty is that it is never clear whether the chosen indicator relates to the generation or use of human capacity. The growth of real income is an example. Economists use this variable to measure the rate of development, improvements in welfare, progress in poverty reduction, and the increase in productive capacity. Though the problems with this indicator are well known (e.g., income distribution is ignored), it is a robust index of income and output with which most variables relevant to development are correlated.

Annex 5: Indicators for the Generation and Use of Human Capacity

A. Generation of Human Capacity

As noted in the text, the indicators are grouped in five categories: access, quality, investment, performance, and context. At the most fundamental level, *access* to education relates to the ease of entry by students both female and male into formal education and the absence of barriers (distance, poverty, dilapidated facilities, disease, violence, social restrictions) to their participation at all levels of formal education. Conventional indicators of access include the proportion of the relevant age cohort entering primary school and higher levels, the gender ratio in primary and secondary education, the expected years of schooling, and the share of children outside the labor force.

The *quality* of education refers to learning achievement related to well-established (local or international) standards. Desirable data would be the results of standardized tests such as PISA (Program for International Student Assessment) or TIMSS (Trends in International Mathematics and Science Study). These are not available for all the countries covered by the calculator. To compensate, we use proxies such as the student-teacher ratio, the proportion of certified teachers, and the dropout or repetition rate.

The generation of human capacity requires *investment* in education and training. Investment reflects the willingness of individuals, families, and governments to commit resources (finance, physical facilities, time, and skilled labor) to provide a large segment of the population with access to education and to endeavor to raise the quality of the learning and knowledge transfer. Ideally, all resources (public and private) devoted to formal education should be measured. Only partial estimates are available in practice. These include the percent of the government budget allocated to education in general or to primary education in particular, the share of the education budget spent on salaries, and the rate of expenditure on a per pupil basis. Missing from these indicators is the amount that individuals and families devote to support formal education (transport, school fees, books) and other expenses (tutoring, educational enrichment) to compensate for gaps or deficiencies in formal schooling.

The *performance* of education refers to the degree to which particular cohorts of students can master the content of the relevant formal classes as measured by various assessment techniques. Again, the basic data to measure performance on a country-by-country basis are not complete. Proxies are used. Some of them are student survival rates (in primary and secondary school), dropout rates, teacher attendance, transition rates from primary to secondary school, and female survival rates across grades.

Analyzing the generation of human capacity requires a detailed understanding of the importance of the broader *context* (or non-education factors). These factors capture the extent to which the operation of the education system is determined by the broader

economic and social setting. Included in these indicators are the rates of urbanization, life expectancy at birth, the international trade ratio, and the adult HIV/AIDS prevalence rate. Including these variables helps account for some of the positive and negative factors outside the education system that affect human capacity. One of these, which is included as part of the Human Development Index, is the rate of economic growth. Rapid economic growth is educational. Among other things, it has important lessons regarding the advantages of discipline, inventiveness, flexibility and life-long learning.

B. Use of Human Capacity:

The use of human capacity depends on the organization of the economy and society, the incentives for enterprises to expand employment, the net returns from using different combinations of skills and competences, and the general level of confidence within the private sector regarding the future prospects for growth and development. The use of human capacity differs in a fundamental respect from the generation of human capacity. As a matter of policy, governments can decide to educate and train more children, youth and adults (and thereby generate more human capacity). Governments, as a matter of policy, have few means of effectively using that additional capacity in a sustained way. They almost invariably encounter financial, organizational and managerial constraints that impede employment expansion. In all societies, the use of human capacity is intimately tied to the population's expectations about the future. Robust, buoyant expectations expand the use of human capacity; weak or adverse expectations diminish the use of human capacity. The indicators, grouped under the categories of governance, poverty, workplace, economic performance, and infrastructure, attempt to measure these effects.

The term *governance* generally refers to the quality of government or public administration. Poorly governed societies use human capacity inefficiently and ineffectively; well-governed societies do not. Governance is multi-faceted and is difficult to measure. Key indicators include measures of corruption, barriers to the formation of new businesses, the degree of income inequality (as measured by the Gini coefficient), country risk, and dependence on foreign aid.

Poverty and deprivation have many dimensions. Low-income economies may have large numbers of people working but due to their limited capacities, their productivity (i.e., output per worker) and incomes are low. This situation is self-reinforcing. With low income, there are few incentives and limited resources available to expand activities that improve skills and capacities. Important indicators of poverty include female life expectancy at birth, the share of the population with daily incomes above \$1 (in purchasing power parity terms), and the proportion of children whose height-for-age (and hence nutritive status) is consistent international norms.

Workplace issues such as labor force, employment, and youth engagement critically affect how human capacity is used. Progressive economies and societies have dynamic labor markets that generate large volumes of remunerative employment. Poorly

performing economies do not. The indicators are designed to reflect workplace conditions and workforce dynamics. They include measures of labor regulations, the adult HIV/AIDS prevalence rate, employment outside of agriculture, and the rate of domestic savings and investment.

The most widely used gauge of *economic performance* is the growth rate of real per capita income. For a particular country, it can be converted to a zero-one scale by relating it to the best-in-region, or a pre-determined goal such as the 7 percent per annum for all countries in Sub-Saharan Africa under the New Partnership for Development in Africa, NEPAD. The rate of income growth is also included in Human Development Index (HDI) together with indicators of life expectancy at birth, adult literacy, and secondary/tertiary school enrolment. Critical to economic performance is the quality of macroeconomic management. This is reflected in fiscal and monetary management, exchange rate and trade policies, and debt dynamics. Prudently managed countries are characterized by low business risk and rising rates of investment. These foster entrepreneurship and enterprise spurring economic growth and leading to the expanding use of human capacity.

Indicators included under *infrastructure* relate to the general features of the economy that complement the use of human capacity. These include the prevalence of mobile phones and personal computers and the proportion of roads that are paved. With limited communications services and few physical facilities, many poor countries face daunting barriers of distance and isolation. Such settings are relatively closed, slow to adapt, and lacking in dynamism. They do not use their available human capacity efficiently or effectively to promote economic growth and improve welfare.

Endnotes

¹ A useful definition of (individual) capacity is "...the power to grasp and analyze ideas and cope with problems" (*Webster's New Collegiate Dictionary* 1975, p.164). Hilderbrand, writing in Maconick (2002, p.39) referred to capacity as "...the means, or the ability, to fulfill a task or meet an objective effectively." See also Hilderbrand and Grindle (1997). This definition applies to individuals and organizations and is consistent with the recent emphasis on organizational and institutional capacity. As the United Kingdom Parliamentary Office of Science and Technology's (POST, 2004, p.2) stated: "Capacity is not well defined, but can be understood as the ability of individuals, organizations or societies to meet their needs."

² Streeten 1972, Ch. 8; Keilson 2001; Pritchett 2004; POST 2004, p.2; USAID/EGAT 2004

³ Schultz 1959, 1962, 1963; Johnson 1964; Freeman 1977; Abramovitz 1986; Griliches 1996; AfDB 1998; Temple 1999; Birdsall 2001; McPherson 2002; HSBank 2003; Breton 2003; Solow 2003; Greenspan 2004; McMahon 2004; Heckman and Masterov 2004

⁴ In 2001/2, most developing country governments allocated 15 to 20 percent of their current and capital budgets to education (*World Development Indicators* World Bank 2004, Table 2.10).

⁵ *WDI* 2004, pp.1-13, Tables 1.2 to 1.4 and www.developmentgoals.org. UNICEF (2004), *Economist* (2004, Sep. 11) and UN (2005) track progress on the MDGs.

⁶ As explained by the World Bank (*World Development Indicators* 2004, p.5):

Education is the foundation of democratic societies and globally competitive economies. It is the basis for reducing poverty and inequality, increasing productivity, enabling the use of new technologies and creating and spreading knowledge. In an increasingly complex, knowledge-dependent world, primary education, as the gateway to higher education, must be the first priority. The Millennium Development Goals call on the world to ensure that by 2015 all children are able to complete a course of primary education.

⁷ Again, the World Bank (*loc. cit.*, p.6):

Evidence from around the world shows that eliminating gender disparities in education is one of the most effective development actions a country can take. When a country educates both its boys and its girls, economic productivity tends to rise, maternal and infant mortality rates usually fall, fertility rates decline, and the health and educational prospects of the next generation improve.

⁸ Bruns, Mingat, and Rakotomalala (2003, Ch. 2) examine the progress towards UPE since the Jomtien conference. UNICEF (1999, Figure 4) provides a timeline of international achievements on education from 1948 (when EFA was declared a human right) to 1997.

⁹ "EFA Fast Track Initiative Fund for Program Preparation" Draft Concept Note, July 15, 2004. Opening a World Bank press conference on EFA, the chair of the EFA working group stated: "...what we're going to try and do [with EFA] is unravel this knot of how to get the hundred million boys and girls that are out of school at the moment, never seen the inside of a classroom, how we help them get the chance by 2015 to learn to read, write and count and thus open the door to their own societies, their own national economies, and their countries' ability to enter the global economy." (World Bank 2004).

¹⁰ Meeting the UPE target will be one thing. Sustaining the effort will be another. The historical record is mixed. For example, Zambia significantly expanded all levels of education in the first two decades after independence (i.e., from 1964 to the mid-1980s). The effort unraveled when the economy declined (Kelley 1991; Hoover and McPherson 1999; Jung and Thorbecke 2001; Hill and McPherson 2004, Ch. 12). The aggregate data are revealing. Gross primary enrolment in 1990/1 was 99 percent; by 2000/1 it had fallen to 79 percent. Over the same period, secondary and tertiary gross remained unchanged (*WDI* 2004, Table 2.11).

¹¹ ID21 2003; Puryear 2004; Clemens 2004

¹² This is a theme of the 2002 *EFA Global Monitoring Report* (UNESCO 2002). Education performance is examined under four categories: context, inputs, process, and outcomes. The relevance of context to education performance includes the complementary role of public expenditure in promoting economic growth (Aschauer 2000); the importance of environment and geography as determinants of economic growth (Sachs 2003); the adverse impacts of corruption and rent-seeking on economic growth (Bhagwati

1998); the role of “social capability” in sustaining economic growth (Abramovitz 1986); and improvements in health to support rising education standards (Schultz 1997; HRH/LJI 2003; PHR 2004).

¹³ The goal has been stated in several ways. Pritchett (2004, p.5) highlighted “learning achievement”. USAID/ED (2004) stressed “relevant” learning while Johnstone (1992) and Roberts (2003) emphasized “learning productivity”. The EFA Global Monitoring Report 2005 (UNESCO 2004, p.19) framed the goal in two parts: enhancing “learner’s cognitive development” and “promoting commonly shared values”.

¹⁴ The emphasis on sustainability is intentional. The target date for meeting the MDGs is 2015. Donors and governments tend to be so focused on that date that the period beyond is being ignored. History suggests caution. Many countries have attained pre-determined social goals and regressed. The former Soviet Union grew rapidly then collapsed; Western societies (e.g., the United States) achieved major improvements in the distribution of income and wealth up to the early 1980s, only to see those gains erode as employment conditions shifted and social programs lost momentum; and several African countries (Zambia’s experience was cited earlier) expanded access to education until the 1980s, after which the effort reversed as economic difficulties mounted. In Latin America, literacy rates fell during the 1990s in Argentina and Uruguay due to worsening economic performance and cuts in public sector support for education. By the mid-1990s, adult illiteracy in Argentina had risen to 14 percent from 7.4 percent in 1970 and 6.1 percent in 1980 (Puiggros 1996). It has been common to attribute declining education standards to the cuts in social programs “forced” on countries by the IMF and World Bank (Oxfam 1995; Manuel 2003; Madslien 2004). Conveniently overlooked is that many of the countries were in serious trouble long before they sought assistance from the IMF and other donors.

¹⁵ Economists distinguish nominal from effective demand. Annex 1 has a discussion.

¹⁶ That children have low earnings is beside the point. The real cost of not having a child working is the share foregone of the family’s income (Colclough 1996).

¹⁷ UNICEF 1999, 2004; Pritchett 2004; Birdsall, Ibrahim and Gupta 2004.

¹⁸ The World Bank’s *World Development Report* 1980, which focused on “human development,” stressed this point. According to Knight (1980, p.240), “Human (resource) development is defined ...to include initiatives in nutrition, health, family planning, and basic education.”

¹⁹ As an illustration, the Massachusetts Bay Colony legislated in 1642 that all towns with more than 50 families had to supply and support a school teacher (Morison 1965, pp.70-72). Yet, it was not until 1844 that Massachusetts introduced a system of free public primary education. Prussia and Scotland were among the earliest countries to promote universal education. In Prussia, four years of school were compulsory education (Herman 2001; www.encyclopedia.thefreedictionary.com/Education). In Australia, Victoria was the first state to introduce compulsory primary education. This came in the wake of immigration and the growth of income associated with the gold rush of the 1850s (MacIntyre 2004).

²⁰ Streeten 1972, Ch.8; Holton 1984; Lazerson *et al.* 1985; Arndt 1987; Johnstone 1992; Saint 1992; Stahlke and Nyce 1996; Etuk 1996; Domatob 1996; Attah 1996; FRBNY 1998; Herbert 2003; Ouchi 2003; Rotherham 2003; Rudalevige 2003; Gatto 2003; Editorial, NYT, Nov. 24, 2004; Badat 2004; World Bank 2004 (Bangladesh reform); Newman, Courturier and Scurry 2004.

²¹ Streeten (1972, Ch. 2) called them “single barrier theories of development.” The Physiocrats attributed a fundamental role to land; Adam Smith emphasized the specialization of tasks that accompanies the division of labor; Karl Marx argued that labor power is the only source of value; Malthus highlighted the negative effects of population growth; Ricardo focused on the competitive gains from free trade; Von Thunen stressed the importance of location; and Schumpeter underscored the role of entrepreneurship in the process of “creative destruction” (Schumpeter 1954). The pattern has continued over recent decades with topics such as population control, basic human needs, governance, infrastructure, environment, privatization, micro finance, and democratization being emphasized and then dropped. The dot-com boom of the 1990s, prompted discussion of the “new economy” driven by knowledge accumulation. Though these are useful contributions, they are partial explanations at best. Zarnowitz (1998, p.785) aptly summarized the point: “mono-causal theories may help explain some episodes but are invalidated by long experience.”

²² Basic industries were supposed to create strong backward and forward linkages thereby raising sector output, employment, and ultimately consumer expenditure and welfare.

²³ World Bank data (*WDI* 2004, Tables 2.1 and 4.1) show that over the periods 1980-1990 and 1990-2002 real per capita income in Zambia declined by 2.5 percent and 1.6 percent per annum, respectively.

²⁴ Adam Smith, an advocate of limited government, appreciated the indispensable role of public sector investment to support private sector activity. Book V of *The Wealth of Nations* (Cannan edition) makes this point. Without the public sector keeping property secure (p. 670), providing essential public works (p. 681), and protecting trade (p. 681), commerce and industry could not flourish.

²⁵ Both Lewis (1956) and Chenery (1958) argued that development projects would not succeed unless (the context established by) government administration was efficient and tolerably honest. Development specialists, particularly from the World Bank, have returned to this theme in discussing aid effectiveness (Burnside and Dollar 1997; World Bank 1998; Devarajan, Dollar, and Holmgren 2003; DCD/DAC 2005).

²⁶ Harbison 1962; Harbison and Myers 1964; Davis 1966; McGinn 1979; Arndt 1987, Ch.3; Meier 1970, pp. 620ff.

²⁷ Coleman (1990, p.304) made the link explicit – human capital is “...created by changing persons so as to give them the skills and capabilities that make them able to act in new ways.” Rosen (1998, p.681) defined human capital as “...the productive capacities of human beings as income producing agents...”. Dowrick (2002, p.2), Jung and Thorbecke (2002, p.7), and Solow (2003, p.49), viewed human capital as “skills and ideas.” Rycroft (2004) pushed the concept beyond the individual to equate human capital with “know-how” that “...is carried [in networks] by groups and teams....”

²⁸ Mankiw, Romer and Weil (1992) treat human and physical capital as complements.

²⁹ Press reports over the last year or so provide details of slavery. Writing in the *The New York Times*, Nicholas Kristof has highlighted sex slavery in the Far East (Laos, Cambodia, Vietnam) and child-slaves press-ganged into rebel armies in Northern Uganda (Kristof 2005). Andersson (2005) has an account of slavery in Niger.

³⁰ Workers find it difficult to signal their skills and aptitudes to potential employers (Spence 1973; Hirschleifer 1989, pp.190-3; Wilson 1998).

³¹ What cannot be measured easily is the value of connections through acquaintances, networks, and other linkages. Writing in *The New York Times* (Economic Scene, August 21 2004), Kenneth Arrow cited evidence that a large part of the wage differential between individuals had no relation to formal qualifications. An important explanation is the person’s connections. This “rent” weakens the link between formal education, observable skills, and earnings.

³² Examples are easy to construct: an MIT research chemist with no laboratory, a Wall Street banker operating in the financial market in Kinshasa (Congo), the president of Harvard University appointed Vice-Chancellor of the University of Zambia (Lusaka). Although their basic skills and talents would be undiminished, the context would dramatically lower their productivity by every conventional standard.

³³ Becker 1964; Psacharopoulos 1995; Colclough 1996; Sperling 2001, 2003; Psacharopoulos and Patrinos 2002; Behrman, Ross and Sabot 2002; Nussbaum 2003; Behrman 2003; Heckman and Masterov 2004. Each of these studies confirms the high returns to education, especially primary education. The impact of economic growth is important as well (Appiah and McMahon 2002; Easterly 2002, Ch.4; Birdsall, Ibrahim and Gupta 2004; and Pritchett 2004). There are other payoffs as well. Gruber (2004, p.2) noted: “...what matters is not only the private returns in terms of higher wages, but also the public returns to society from having a more highly educated populace.” Two of these returns are improved civic participation and intergenerational transfers as children gain better educations than their parents.

³⁴ UNDP 2003, pp. 92-93; AED 2003

³⁵ Approximately 550 million “working poor” earned less than \$1 per day in 2003 (ILO 2004).

³⁶ The ILO (2004) estimated that, in 2003, 186 million people were out of work and looking for work. Of these, 88 million were aged 15-24 years.

³⁷ Schelling 1978; Hyden 1983; Simon 1991, p.38; Sah 1991; de V. Graaff 1998, p.394; Kolm 1998; Ostrom 2000; Sunstein 2004

³⁸ South Africa has massive waste of human capacity through open unemployment and discouraged workers. A recent Reserve Bank of South Africa study showed that labor force participation declined from around 59 percent of the adult age cohort 15-64 in 2000 to 54 percent in 2003. Open unemployment exceeds 30 percent (Seria 2004). The situation has been aggravated by economic mismanagement. A

pattern of continuous fiscal deficits, persistent inflation, a chronically overvalued real exchange rate, and low savings and investment have sapped the dynamism from the economy. Even programs such as GEAR (Growth, Employment and Reconstruction) failed to boost growth significantly (Nowicki 2004; Khamfula 2004). World Bank data (*WDI* 2004, Tables 4.1, 2.1) show that average per capita income declined over the period 1990-2002.

³⁹ With the exceptions of Botswana and Mauritius, this is the case in SSA. From 1980 to 1990, average per capita income declined by 1.1 percent per annum. The corresponding datum for the period 1990 to 2002 was 0.1 percent (*WDI* 2004, Tables 2.1, 4.1). See also World Bank (2000), IMF (2001, pp. 75 *ff*), Matheson (2003), and BBC News (2004, June 2).

⁴⁰ These considerations underlie the spillover and agglomeration effects emphasized by endogenous growth theory (Anderson and Moene 1993). The accumulation of information and generation of knowledge that flows from the creativity and innovation induces rapid economic growth which sets the stage for further advances (Arrow 1962; 2000; Romer 1986; Lucas 1988; Arthur 1990; Kremer 1993; Acemoglu 1996; Solow 1997; Ricoy 1998; Pissarides 1997; Vassilakis 1998; Johnston 2000; Acemoglu and Zilibotti 2001; Birdsall 2001; Ramcharan 2002).

⁴¹ Lack of economic growth has educational effects as well. Unfortunately, it teaches many negative lessons: that initiative and innovation are not rewarded; that personal and family connections are more important for advancement than skill or merit; and that investment in education and training have low returns. Researchers have given too little attention to this point. For example, Sachs and Warner (1997) made a major effort to identify “sources of slow growth” in Africa. Their results highlighted the usual sources – lack of openness, poor governance, high inflation, budget deficits, and so on. Missing was any recognition that the lack of growth was itself a source of slow growth. Investors had learned that their efforts would be futile and diverted their resources elsewhere.

⁴² Good economic management is a critical dimension of “good governance” (McPherson 2000, 2002, Ch.4; Hill and McPherson 2004, Ch.13). Most discussions of governance ignore this aspect and focus attention on conventional matters such as transparency, accountability, openness, and gender sensitivity (Landell-Mills and Serageldin 1991; Hyden and Bratton 1992; Brautigam 1996; Tandon and Naidoo 1999; UNECA 2001; NEPAD 2001).

⁴³ This is the basic feature of a “capable state” (World Bank 1997). Unfortunately, the requirement has been widely ignored by African governments and donor agencies as they strive to promote development. Activities that over-stretch a nation’s (financial, human, physical, organizational, and institutional) capacities are pre-programmed to fail. This point has been illustrated by the separate development trajectories found in Asia and Africa. As Perkins (1992, 1994) and more recently Radelet (2004), Hausmann, Pritchett, and Rodrik (2004) among others (see *The Economist*, August 7, 2004, p.63) have noted Asian countries did not over-reach. They kept their agendas manageable, strengthened their institutions, made progress and built from there. By contrast, the majority of African countries, especially those supported by the donors (through SAFs, ESAFs, CDFs, PGRFs, PRSPs, HIPC and the like) persistently overstretched their agendas. This has produced stagnation and regression rather than growth and development.

⁴⁴ These points emerged from a detailed study of the factors required to restart and sustain economic growth and development in Africa (McPherson 2002). Radelet (2004) has a similar list.

⁴⁵ The growth and development-inducing value of reduced aid dependence is reviewed in McPherson (1999; 2002, Ch. 9) and Hill and McPherson (2004, Ch. 14). The arguments are not new (Friedman 1958; Bell 1966; Baer 1993; Berg 1996; van de Walle 1996; Fernholz *et al.* 1996; and HIID 1997). Others reject the arguments. Many specialists believe that significantly larger amounts of aid are needed to promote development. The EFA-FTI is based on the premise that additional funds can hasten the achievement of the education MDGs. The Monterrey Consensus (Stern 2002) presumes that aid flows will increase substantively and will be used effectively if effective ways (such as the Millennium Challenge Account) can be found to use it. The recently released United Nations Millennium Project report has argued that in order for the MDGs to be met, large amounts of additional aid will be required from the rich countries (UN 2005; Dugger 2005). What has not been spelled out by any of those who advocate more foreign aid is how highly aid-dependent countries, particularly those losing human capacity through HIV/AIDS, will create

the organization and institutions needed to efficiently absorb existing aid, let alone any substantial increase in aid.

⁴⁶ Krueger (2004, p.8) argued that governments do not necessarily have to create jobs directly or control the economy. She noted: "What governments can do, though, is create the right conditions for job-rich investment to take place. That means sound macroeconomic policies. It means the elimination of trade-distorting subsidies and protection. It means trade liberalization."

⁴⁷ The instrumental value of improved health for education and economic growth has been widely discussed (Strauss and Thomas 1998; Temple 1999, p.139; Appleton 1999; *Economist*, 2000, June 3, p.78; UNESCO 2001; Sperling 2001; HRH/LJI 2003).

⁴⁸ Efficiency wage theories emphasize both points (Leibenstein 1980; Yellen 1984; Ballester, Livnat, and Sinha 1998). Employers gain by paying higher wages because healthier workers are more productive and better motivated.

⁴⁹ Discussing the MDGs for education, Birdsall, Ibrahim, and Gupta (2004, p.1) noted:

Education is, first and foremost, the vehicle through which societies reproduce themselves; thus, the inputs are not only teachers, schools and textbooks, but the full set of ideas about how a given society is structured and should be structured in the future. The outputs are not only students enrolled in and completing education cycles, but also citizens imbued (sic!) through formal education with a particular perspective.

⁵⁰ For example, Biggs, Shah, and Srivastava (1995) reviewed methods by which African firms boosted their technical capacities through a variety of non-formal learning mechanisms.

⁵¹ Formal education has many functions. For instance, the Government of Trinidad and Tobago in its Education Policy Paper, 1993-2003 (GOTT 1993) stated that education is an "inherent right" for every child and is fundamental to the country's development. The education system "must endeavor to develop a spiritually, morally, physically, intellectually and emotionally sound individual... [and]...must provide curricular arrangements and choices that ensure that cultural, ethnic, class and gender needs are appropriately addressed." More recently, education was seen as delivering services that "bring at least literacy and numeracy..."; create "...human skills and knowledge and...[enhance...] human productivity..."; expand "...human choices and human capabilities"; and strengthen "...human society by promoting citizenship, justice, equality, peace, and national values" (UNESCO 2004, Ch.2).

⁵² "People in chronic poverty are those who have benefited least from economic growth and development. They, and their children, will make up the majority of the 900 million people who will still be in poverty in 2015, even if the Millennium Development Goals are met" (*Global Poverty Report*, 2004, p.3).

⁵³ Chronic poverty fosters extreme conservatism (Galbraith 1979; FAO 1996; Cohen 1997, 1998; Marris 1999). The poor cope by minimizing the risks of outcomes that will leave them destitute. Denied by their poverty from "fail-safe" activities, the chronically poor pay close attention to activities that are "safe-fail." Some coping strategies, unfortunately, like transaction sex, pose major health risks especially where HIV prevalence rates are high.

⁵⁴ Galbraith (1979) referred to this as "accommodation." It is manifest as the unwillingness among the very poor to struggle against what to them appear to be insurmountable odds.

⁵⁵ World Bank 2002, pp. 82-85; Morley and Coady 2003; Sadoulet and de Janvry 2003.

⁵⁶ An example is the approximately half million displaced persons in Northern Uganda IDPProject (2002).

⁵⁷ WHO 2001; IMF 2004, PHR 2004

⁵⁸ Educated children are more likely to remain healthy. This is why education is called a "social vaccine" (UNAIDS/IATT 2002; World Bank 2003; Jellema and Phillips 2004).

⁵⁹ Paes de Barros and Mendonca 1999. Heckman and Masterov (2004) identified another high payoff for early childhood education: it is far cheaper to prevent social pathologies by educating and socializing poor and underprivileged children at an early age than paying for the remedial measures (jail, rehabilitation, counseling) once the children become youths and adults.

⁶⁰ Birdsall, Ibrahim and Gupta 2004; Pritchett 2004.

⁶¹ USAID/Honduras (2004). A problem in Honduras (and common to other education systems) is that higher wages often do not raise teaching standards or the quality of education (Gruber 2004, p.3; Pritchett 2004, p.2).

⁶² Life-long learning is nothing more or less than an individual following a semi-structured process of gaining additional knowledge over their life-times. The most famous life-long learner the United States has produced was Abraham Lincoln who, by his own admission, had formal schooling that “did not amount to one year” (Freedman 1987, p.12). Many people in developing countries have few opportunities to upgrade their skills and knowledge through formal programs. Life-long learning emphasizes knowledge generation and skill enhancement that accrues through individual effort to participate, share, network, think creatively, and experiment (Fulmer 2000; FDC 2001; Willums 2001; Dowrick 2002; USAID 2002; Cummings 2003; World Bank 2003; Kaplan 2003; OECD 2004; Kochan 2004; FRBD 2004; Rycroft 2004; Prensky 2004; Bassi and McMurrer 2004).

⁶³ Outlook 2001

⁶⁴ ILO 1998, Chs. 2,5; Fulmer 2000; Zhang 2001; FDC 2001; Kaplan 2003

⁶⁵ In its *Employment Report 1998-99*, the ILO examined why rich countries, where wages were high, were experiencing chronic shortages of labor, while most poor countries, where wages were low, had persistently high rates of under- and unemployment. Workers in rich countries had the depth and breadth of education enabling them to adjust to shifting market and technological conditions. Lacking the necessary education, workers in the poor countries could not adapt (ILO 1998).

⁶⁶ S&T is defined as “...natural and social science, medicine and engineering. It includes basic, strategic and applied research, e.g., policy analysis” (POST 2004).

⁶⁷ POST 2004, p.3

⁶⁸ S&T is seen as helping extend the reach of education programs through the development of innovative learning software and the use of IT to promote distance learning (Lowery Derryck 1999; FDC 2001, pp.5-6).

⁶⁹ The “convergence hypothesis,” widely tested by growth economists holds that poor countries can rapidly “catch up” with richer countries using existing knowledge and technologies (Abramovitz 1986; Hall and Jones 1996; Nelson 1996; Sachs and Warner 1997; Jorgenson 1996; Barro 1999; Ruttan 2001). A common example is the “green revolution” in agriculture (Hayami and Ruttan 1970). The rapid progress made by the Newly Industrialized Countries in Asia is cited as support for the hypothesis. Despite the availability of knowledge and technology (and finance to acquire them) many countries are not “catching up”. Arrow (1974, 2000) provided an explanation: the capacities to understand, organize, and learn are scarce. These are not dimensions of development that existing knowledge and technology can help a poor country leap-frog.

⁷⁰ Zhang 2001, p.3.

⁷¹ These points recur in many forms. Lowery Derryck (1999) referred to Peter Drucker’s views about the importance to the progress in the knowledge economy of adaptability, flexibility, risk-taking, problem-solving, and conceptualization skills. Adjusting to these changes requires a major shift in education. As Kochan (2004, p.71) noted:

The education system of the twentieth century was designed to socialize students to accept the discipline of the command-and-control authority systems and the specialized division of labor that characterized the emerging organizations of the industrial economy. To fit the needs of organizations designed for a more networked, knowledge-based economy, today’s educational system needs to produce graduates with strong science, math, and technical knowledge *and* the ability to think and act creatively, to communicate and work together in teams, and to exercise voice and discretion to solve problems and resolve conflicts within and across organizational boundaries.

⁷² Lancaster 1999

⁷³ Brunner (1985, p.40). The prospect of a positive return is essential. Since no one has infinite wealth, persistent losses (the outcome of irrational behavior) lead to ruin (Alchan 1950).

⁷⁴ This principle is easy state but has proven difficult to heed. Many countries, particularly in Sub-Saharan Africa, have been attempting to recover from the disruptions and excesses of the 1970s and 1980s. Prudent

limits on taxation, spending, and credit creation were regularly ignored with adverse consequences for growth and development (Dumont and Mottin 1980; World Bank 1981, 1984, 1986, 1989, 1994, 2000; van de Walle 1994; Easterly and Levine 1995; McPherson and Goldsmith 1998; Collier and Gunning 1999; Hernandez-Cata 2000; Artadi and Sala-I-Martin 2003).

⁷⁵ This point is not contradicted by the persistent high rates of unemployment in parts of the European Union (like France, Germany, and Spain). The Dutch and the Irish have shown that appropriate macro policies in the form of real wage adjustments reduce unemployment.

⁷⁶ Research has shown that increased training leads to higher rates of employment (OECD 2004).

⁷⁷ McPherson and Zinnes 1992; IRIS 1996; Duesenberry, Goldsmith and McPherson 1999; Gray and McPherson 1999.

⁷⁸ NSO Malawi 2002; Ochieng 2002; IPAR 2003; ID21 2003; USAID/Malawi 2004; “Achieving Education For All: The Real Challenge” EFA Secretariat, Washington D.C., January 2004; IRIN 2005

⁷⁹ A problem skipped over is the extent to which those who drop out of school have been disabled by their experience. Will they seek further formal education or, having benefited so little, be deterred from pursuing additional education, formal and non-formal?

⁸⁰ Education quality was already low before the governments precipitously mandated UPE (Abagi and Odipo 1997; Ndeezi 2000; NSO Malawi 2002; Aguti 2002). This is unfortunate since quality education has been a bedrock issue (Beeby 1969; Lazerson *et al.* 1985; Chapman and Carrier 1990; Saint 1992; Lee and Barro 1999; World Bank 1995, 2002; FRBNY 1998; UNESCO 2004)

⁸¹ According to Prensky (2004) “...the youngest workers don’t need to fit into the agile, flat, team-based organizations older executives are striving to design. They just do it: They communicate, share, buy, sell, exchange, create, meet, collect, coordinate, play games, learn, evolve, search, analyze, report, program, socialize, explore, and even transgress using new digital methods and a new vocabulary most older managers don’t even understand.”

⁸² See “Capacity Development for MDGs” on www.topics.developmentgateway.org/mdg. The campaign’s premise was: “The majority of the world’s people are under the age of 18, with a disproportionate number living in the world’s poorest countries. The main challenges encountered by the youth in developing countries include lack of education and skills, lack of employment, HIV/AIDS, crime, violence, and drugs abuse.”

⁸³ The problems of unemployed youth and chronic unemployment are not confined to poor countries (Herbert 2004). Surveys in the United States revealed: “...44 percent of black men with no high school diploma were idle year-round...[but only] 13 percent of those with a bachelor’s (or higher) degree.” As he noted: “...levels of male joblessness [like] that mock the very idea of stable, viable communities...”

⁸⁴ Cohen 1998; de Waal and Whiteside 2003; Yamano and Jayne 2004

⁸⁵ Eberstadt (2004) and personal communication with Professor Anthony Saich, John F. Kennedy School of Government, Harvard University.

⁸⁶ A further example is the World Bank’s “development diamond” in its *Country-At-A-Glance* series.

⁸⁷ UNESCO 2002

⁸⁸ *Global Poverty Report* 2004, Fig. 1.3, p. 11

⁸⁹ Details are available on the World Bank website www.worldbank.org/ under “economics of education”. The 2005 EFA Global Monitoring Report (referred to earlier) focused on quality. It contains an Education Development Index, of which quality is a component (UNESCO 2004, pp.236-247).

⁹⁰ All efficiency indicators refer to a specific goal or objective. Economists invariably focus on efficiency because of their preoccupation with optimization. Every maximization problem (such as maximizing the value of output with given inputs) has an equivalent dual (minimization) problem (namely, minimizing the input cost of achieving a specified level of output). The point carries over to analyses of education efficiency. When the goal is the delivery of a particular standard of education service (measured by test scores), efficiency analysis highlights the most appropriate (i.e., least cost) combination of inputs to achieve that standard. When the goal relates to the use of education inputs (teachers, text-books etc.), efficiency analysis focuses on the maximum level of education services that can be achieved. Behrman (2003) has more details.

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- ⁹¹ Recent studies show no clear relation between test scores and the quality of education (Gruber 2004; Pritchett 2004). Despite renewed emphasis in many education systems on standardized tests as a guide to achievement, the evidence that such tests raise education quality is sparse. Invariably, teachers and school systems adjust by “teaching to the test.” In doing this, they bypass creative thinking, critical enquiry, and knowledge accumulation (the hallmarks of a quality education).
- ⁹² Special programs are often needed to reach orphans (Ainsworth and Filmer 2002; UNAIDS/UNICEF 2002; USAID 2003).
- ⁹³ Bruns, Mingat, and Rakotomalala 2003, p.18
- ⁹⁴ These interconnections are inherent to demand and supply systems. Arrow (1959) showed that the standard demand/supply framework: $D = D(P)$; $S = S(P)$; $D = S$, where D , S , and P are respectively quantity demanded, quantity supplied, and price, is indeterminate when it is out of equilibrium. Only one P is consistent with equilibrium. Out of equilibrium, adjustment occurs through changes in all elements, demand, supply, and price.
- ⁹⁵ This choice is far from random. Mali has low per capita income (\$850 in 2002 in PPP adjusted terms). It is a Millennium Challenge Account country and it is on the EFA-FTI roster. It is also a newly emerged democracy that is seeking to reverse years of stagnation and decline.
- ⁹⁶ The relevant website is <http://qesdb.cdie.org/ged/calculator1.html>.
- ⁹⁷ All data, with the exception of the corruption index (compiled by Transparency International) have been taken from the *World Development Indicators 2004* (World Bank 2004). The data file (an Excel spreadsheet) is available on request from the author.
- ⁹⁸ Countries are considered to be severely indebted if their debt/GDP exceeds 80 percent (*WDI* 2004, Table 4.17, p.249).
- ⁹⁹ The basic principles are covered in Mansfield and Yohe (2003).
- ¹⁰⁰ These have a long tradition and include Clark (1940), Solow (1957), Kuznets (1966), Denison (1962, 1969), Chenery and Syrquin (1975), Sachs and Warner (1997), Barro (1999), Mundlak 2001, and Jorgenson (2002) among many others.
- ¹⁰¹ FRBD 2004
- ¹⁰² Summarized in the section “working smarter, not harder” (*ibid.*, pp.11-15). The report stated: “Rapid productivity growth puts a premium on retraining because progress entails job losses. The faster workers recycle into new employment, the better.”
- ¹⁰³ Jorgenson 1996; 2002, Ch. 7; Jorgenson, Ho and Stiroh 2003.
- ¹⁰⁴ Ho and Jorgenson 2002, p.292.
- ¹⁰⁵ *ibid.*, p. 293-294
- ¹⁰⁶ The conditions are many buyers and sellers of homogeneous goods with complete information.
- ¹⁰⁷ Information, techniques, and new knowledge often diffuse throughout the economy and society in ways unrelated to market processes (Arrow 2000).
- ¹⁰⁸ The literature on these points is voluminous (Coase 1994; Cheung 1998; de V. Graaff 1998; Kolm 1998; Walters 1998; Wilson 1998; Musgrave 1998; Kotowitz 1998; Niehans 1998).
- ¹⁰⁹ Wolf 1979, 1988
- ¹¹⁰ During the Depression of the 1930s, the unfettered operation of the market left large numbers of able-bodied workers unemployed. The problem was the lack of effective demand (Keynes 1936), subsequently supplied by an expansion of government expenditure.
- ¹¹¹ Cited in Whiteside (2002).
- ¹¹² Similar results emerged in a more recent survey of 7500 people in 10 African countries (BBC News 2004, October 18). It showed that the key issues were “poverty...followed by HIV/AIDS, unemployment, illiteracy, and corruption”.
- ¹¹³ Clark 1998; Crawford 1998
- ¹¹⁴ Brautigam 1997
- ¹¹⁵ Zarnowitz 1998, p. 783
- ¹¹⁶ Tinbergen 1998

¹¹⁷ Wax (2005, p.A6) quoted a survivor of the Sudanese war: “When hunger came, you threw your books on the ground....You can’t study when you have to spend your time finding what to eat.” The problem is often exacerbated by HIV/AIDS (USAID 2003; UNICEF 2004).

¹¹⁸ Sadoulet and de Janvry 2003

¹¹⁹ Boer 2002

¹²⁰ Examples are easy to find (McPherson and Gray 2002). The author provides details for Zambia (Hill and McPherson 2004, Ch. 14). Bruns and Mayoka (2004) describe how the government of Uganda has maneuvered the donor community into taking responsibility for funding a large share of the education budget for the indefinite future.